

## Modeling of the Potential for Vertically Downward Saltwater Migration from a Dredge Pond

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### ABSTRACT

Modeling was conducted to assess the potential for migration of saltwater deposited in a dredge pond into a freshwater aquifer. A local-scale SEAWAT model was constructed to evaluate the significance of head differences between the dredge pond, the aquifer system, and an adjacent creek on loss of containment of the saltwater deposited in the pond. Results from this model were used to provide guidance on how to operate the dredge pond and to develop hydraulic metrics for when it would be safe to initiate deposition of the saltwater and dredge materials into the pond. The results of this model compared favorably to those of another variable density groundwater flow and transport model. Dredging operations are currently underway and field data are being collected. Comparison of the field data to model results will be possible once the data have been processed. A second, more general model, was used to investigate the problem of an unstable saltwater interface (saltwater overlying freshwater) and to evaluate the interplay between hydraulic and density gradients on downward saltwater migration.

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